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but it would have been much better to leave that aside entirely; for the reader, noticing these discrepancies between recent and fossil forms, is not satisfied with the simple fact that things have changed since Tertiary times; and, farther, these paleontological introductions to each chapter cannot claim at all to be reliable; indeed, they appear to have been written without the slightest knowledge of Tertiary — especially American — Mammalian Paleontology.

A. E. O.

Recent Papers on Sipunculids. — In the collections brought from South Africa by Professor M. Weber, Sluiter[1] finds four species and one variety, all known forms of Sipunculid's, and one species of Thalassema, making a total of only twelve species and two varieties of these groups reported from the east coast of Africa. He explains the poverty of this fauna as due to the lack of extensive coral reefs, which are its fittest habitat. An appendix to the report deals with the form previously described by Sluiter as *Sipunculus indicus* Peters, which Fischer surmised was not the true *S. indicus*. Sluiter now proposes the name *S. discrepans* for the species, and gives an extended description of the differences between the two. Of especial interest is the dissimilarity in the structure of the skin, which appears to offer one of the readiest means of specific determination in this genus.

In contrast with the poverty of the African coast, Shipley[2] reports a collection made in Rotuma and Funafuti containing fourteen species, of which two, *Sipunculus rotumanus* and *S. funafuti*, are new; one, *Physcosoma varians* Kef., has not yet been reported outside of the Atlantic, where it is common; and one, *Thalassema vegrande* Lamp., has been found but once before, in the Philippines. The other forms noted are common to various localities in the Pacific and Indian Oceans and Red Sea.

The description by the same author of the forms collected by Dr. Willey[3] further shows the richness of this group among the Pacific islands. All the twenty-three species obtained are known forms belonging to Sipunculid genera, as follows: Sipunculus eight species, Physcosoma seven, Aspidosiphon five, and Cloeosiphon, Phascolion, and Phascolosoma one species each; of these, six are identical with species reported in the preceding paper. The author emphasizes the extreme variability of the Sipunculids in external appearance, and the difficulty of specific determination. In *Sipunculus australis* the so-called hooks on the introvert were found to be actually only thickened cuticular ridges, elevated like rolls above the surface; and though characteristic, these structures do not warrant the statement of various authors as to the occasional presence of hooks in this genus. While the large collections of Sipunculids made by Semper, Sluiter, and others, in the Philippine and Malay archipelagoes, have yielded a knowledge of the group in these regions superior to that from other tropical seas, still Shipley is inclined to look upon the Malay archipelago as the center for this group, from which it has spread east along southern Asia to the Red Sea, and outward over the Pacific and Indian Oceans. The abundance, particularly of certain species, in this territory is to be associated with the prevalence of coral reefs over the area. H. B. W.

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[1] Gephyreen von Süd-Afrika, nebst Bemerkungen über Sipunculus indicus Peters, *Zool. Jahrbücher*, Abt. f. Syst., vol. xi, pp. 442–450, 2 figs.

[2] Report on the Gephyrean Worms collected by Mr. J. Stanley Gardiner at Rotuma and Funafuti, *Proc. Zoöl. Soc.*, London, 1898, pp. 468–473, Pl. XXXVII.

[3] A Report on the Sipunculoidea collected by Dr. Willey at the Loyalty Islands and in New Britain, *Zool. Results*, Pt. ii, pp. 151–160, Pl. XVIII.

The Palolo Worm. — The long-existing ignorance concerning this interesting annelid that comes to the surface of the ocean during the third quarter of the moon in October and November, in the Samoan and Fiji islands, has recently been somewhat diminished by the independent researches of Friedländer[1] and of Krämer.[2]

We seem now pretty certain that the creature comes from shallow water — not from mysterious depths; that it lives in dead coral masses; that it casts off the main part of the body to swim free and discharge eggs and sperm when ripe, while the head end probably remains in the coral to regenerate. The suggestion that it is the combined warmth of the sun with least tides that brings on this maturity at a particular phase of the moon seems in the right direction; still we remain ignorant of the real cause of this exact periodicity in reproduction. We are not absolutely sure of the genus to which the creature belongs — despite the fact that so many Europeans have noted its appearance, and that it occurs so abundantly that the natives make its capture for food a set feast, and have incorporated its habits in their folk-lore. E. A. A.

Is Fertilization a Process of Feeding? — N. Iwanzow[3] describes remarkable pseudopodia and tufts of filous threads sent out by *miniature* eggs of a helothurian to seize and engulf spermatozoa. In two

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[1] *Biolog. Centralblatt.*, vol. xviii, May, 1898.

[2] *Ibid.*, vol. xix, January, 1899.

[3] *Bul. Soc. Imp. Nat. de Moscou*, Nr. 3, 1897.